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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,111	07/03/2001	Yoshihisa Inoue	1155-0221P	9238

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EXAMINER
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LU, C CAIXIA

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/897,111

Applicant(s)

INOUE ET AL.

Examiner

Caixia Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 9-14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-8 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1201.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Applicants have elected inventive Group I with the catalyst species as the product resulted from the reaction between compound (C') and compound (III) of Claim 6 or 7. The elected invention reads on Claims 1-2 and 6-8. The Search results indicate that the polymerization process defined by the elected catalyst species is novel. The examination has extended to the next catalyst species-- the catalyst species as the product resulted from the reaction between compound (C) and compound (I) of Claim 4. Claim 3 is canceled. Currently, Claims 1-2, 4, and 6-8 are under examination.

### ***Claim Rejections - 35 USC § 103***

2. Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as obvious over Bansleben et al. (US 6,410,664) and Bansleben et al. (US 6,197,715).

The instant claims are directed to a process for preparation of a polar olefin copolymer comprising copolymerizing a non-polar olefin and a polar olefin in the presence of a transition metal catalyst and a cocatalyst, wherein the difference between the coordination energies of ethylene and methyl acrylate ( $\Delta E$ ) is 50 kJ/mol or less.

US 6,410,664 teaches copolymerization of ethylene and functionalized cyclic olefins in the presence of a Nickel(II) salicylaldimine catalyst (col. 30, lines 24-53 and Table 8).

US 6,410,664 does not expressly teach the coordination energies between the catalyst and ethylene or methyl acrylate. Based on the fact that the copolymerization ethylene and functionalized cyclic olefin can be readily performed, a skilled artisan would have expected the catalyst of US 6,410,664 to inherently have a  $\Delta E$  which

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satisfies the  $\Delta E$  limitation of the instant claims because the  $\Delta E$  limitation of the instant claims is to guarantee the copolymerization between the non-polar olefin and polar olefin to occur readily. When the copolymerization between the non-polar olefin and polar olefin can be easily conducted, the  $\Delta E$  of US 6,410,664 is expected to be small, e.g. to be in the  $\Delta E$  range of the instant claims. Once a product appearing to be substantially identical is found and a 35 USC 102/103 rejection made, the burden of proof is shifted to the applicant to show an unobvious difference. In re Fitzgerald, 205 USPQ 594. In re Fessmann, 180 USPQ 324. Applicants have not met their burden to demonstrate an unobvious difference between the claimed product and the products of the prior art examples.

It is noted that the transition metal the working examples of US 6,410,664 is Ni rather than a metal from Groups 4-6 and 11; however, the transition metals of Group 4 such as Zr, Ti and Hf and Group 6 are expressly taught in col. 4, lines 46-50.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ the teaching of 6,410,664 to conduct copolymerization between polar and non-polar olefins in the presence of Group 4 or 6 transition metal containing catalyst since such is taught in the reference and expected to work and in the absence of showing criticality and unexpected result.

Similar rejection can be made over US 6,197,715 (col. 9, line 5 and Example 11 of col. 34).

***Allowable Subject Matter***

3. Claims 6-8 are allowed for the same reason as indicated in the previous Office action.

***Response to Arguments***

4. Applicant's arguments filed December 12, 2003 have been fully considered. Due to the scope of the transition metal compounds of the amended claims being limited to Group 4, 5, 6 or 11 (Group 10 being excluded), the rejections over Mecking et al. are withdrawn and the rejections over Bansleben (US 6,410,664 and 6,197,715) are modified to be under 35 U.S.C. 103(a) rather than under 35 U.S.C. 102/103.

Applicants argue that "neither Bansleben '664 nor Bansleben '715 suggest the copolymerization [sic] of a non-polar olefin with a polar olefin". This is incorrect. As indicated in the previous Office action and in the above rejections, "US 6,410,664 teaches copolymerization of ethylene and functionalized cyclic olefins in the presence of a Nickel(II) salicylaldimine catalyst (col. 30, lines 24-53 and Table 8)". Under the subscription of Table 8, the functionalized cyclic olefins are listed as 5-norbornen-2-yl acetate and 5-norborne-2-ol, both are polar olefins. The examiner agrees with applicants' opinion that none of the olefins at column 11, lines 30-35 in Bansleben '664 are polar. However, those olefins are examples of cyclic olefins not functionalized cyclic olefins. The examples of functionalized cyclic olefins are disclosed on column 9, lines 62-66 and in Table 8.

Applicants also argue that Bansleben's working examples only disclose Ni containing compounds, thus, Bansleben '664 and Bansleben '715 do not disclose the

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unexpected effects of the instant application. The examiner disagrees. As correctly indicated by the applicants, Bansleben discloses in lines 46-52 of column 4 that, in the catalyst of formula (I), M represents transition metal of Group 6 or Ti, Zr, and Hf. Those transition metal compounds read on the transition metal compounds of the instant claims. One would have expected those transition metal compounds to have similar functions as those exemplified in Bansleben's working examples. Applicants need to provide criticality and unexpected results in order to overcome the rejection.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached from 9:00 am to 3:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful and the matter is urgent, the examiner's supervisor, David Wu, can be reached at (571) 272-1114. The fax numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-0994.



Caixia Lu, Ph. D.  
Primary Examiner  
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